Third Assistant Engineer, Towboat **Bmk. No. C-27**
XH-4742-07

MAJOR DUTIES

Serves as Third Assistant Engineer on a large (over 100 feet in length) diesel-powered twin screw towboat with a total horsepower of 2,000 hp or more operating in the inland waters of the United States. This is a training position leading to the future assignment to a full performance Second Assistant Engineer position. The assignments of this job are generally the same as those for a Second Assistant Engineer but are performed under closer supervision of the Chief Engineer and higher grade engineers who provide greater than normal guidance. Is assigned regular watch responsibility and accomplishes on-the-job training in the supervision and accomplishment of the operation, maintenance, and repair of engine room equipment, machinery, and systems.

1. Exercises shift watch responsibility for the operation, maintenance, and repair of all engine room machinery and equipment, including the main propelling engines, winches, rudder mechanisms, generators, relays, starters, air compressors, fuel pumps, water pumps, fire pumps, refrigeration plants, drinking water and coolant systems, waste disposal/treatment systems, heating and cooling systems, related electrical and/or electronic systems, and similar equipment.

a. Trains in the planning and accomplishment of a shift program to ensure continuous operating efficiency to prevent damage to machinery. Makes regular and periodic inspections by visual and auditory means of all machinery to determine the operating condition and the need for maintenance and repairs. Makes routine minor adjustments on own initiative, receives guidance from higher-level engineers on emergency repairs, and reports major defects to the Chief Engineer. Accomplishes repairs such as replacing bearings, castings, etc.; repairing fuel lines; grinding valves; replacing cylinders and pistons; and removing and replacing complete assemblies. Ensure that all moving parts are properly lubricated. Assists with painting equipment and keeping the engine room clean.

b. Controls the operation of heating, refrigeration, and plumbing systems by manipulating necessary winches, throttles, and switches. Checks and controls the quantity of fuel, oil, water, etc., furnished for proper operation of the vessel machinery. Observes gages such as pressure gages, vacuum gages, fuel oil gages, tachometers, pyrometers, etc., to determine the proper functioning of machinery. Makes inspections to check oil levels, motor generators, gear boxes, generator temperatures, fuel levels, etc. Checks and controls the operation of heating, refrigeration, plumbing, and water supply systems, noting any unusual or abnormal conditions, identifies the causes and recommends remedial action to a higher level Engineer. Checks all water systems to ensure proper chlorination in drinking water and proper chemicals for sedimentation and other purposes. Prepares reports of fuel oil and lubrication consumption and records readings of the gages during the watch.

c. Instructs and trains subordinates in procedures and methods and observes their work for accuracy and compliance with instructions. Lays out their work and instructs them on unusual or difficult work and inspects operations and completed work. Provides input to the Chief Engineer concerning subordinates' performance appraisals. Reports disciplinary problems to the Chief

Engineer for resolution. Prepares shift reports reflecting the work activities during the shift and maintains an engine room log of activities. Instructs and trains subordinates in the safe and efficient performance of their duties and studies the operations directed with a view to correcting or reporting for correction any unsafe condition or practice that might cause injury to employees or persons or property damage.

2. Participates in major repairs and maintenance during lay up periods.

Performs other duties as assigned.

SKILLS AND KNOWLEDGES

--Must possess a U.S. Coast Guard Assistant Engineer's license commensurate with the type engine room machinery and equipment, horsepower, and characteristics of the vessel to which assigned. Progressively develops a knowledge of the vessel: mechanical, hydraulic, electrical, and/or electronic equipment systems, and auxiliary equipment and machinery, and the related skill requirements to diagnose problems and malfunctions and supervise and participate in the maintenance repair, replacement, and modification of such machinery, engines, and systems. Applies the knowledge to understand how such equipment and systems operate individually or in combination. Receives continuous on-the-job training in planning and laying out repair, replacement, maintenance, and modification requirements ranging from those of a minor nature to those of a major nature. Applies knowledge of the fuel and water treatments associated with the various equipment and systems.

--Applies knowledge and ability to interpret and apply working drawings, sketches, diagrams, blueprints, and other information reflected in technical manuals. Applies knowledge of advanced shop math to accomplish computations pertinent to electricity and electronics, electrical equipment, air conditioning and heating, refrigeration and mechanical dimensions, tolerances, and voltages. Applies skill and knowledge in the use of a variety of testing instruments including ammeters, ohmmeters, refrigeration gages and temperature testers in diagnosing problems and malfunctions, and a variety of measuring devices including feeler gages, vernier calipers, inside and outside calipers and micrometers, thread gages, dial indicators, screw pitch gages, protractors, dividers, composers, steel squares, clinometers, etc. Applies skill to accomplish work to tolerance of .001 inch.

--Knowledge of the use of lathes, shapers, and milling machines to understand the processes necessary for certain repairs. Applies skill and knowledge in the use of honing equipment, grinders, jig borers, jig flame cutting processes, and a variety of electric and hand tools common to the trades involved. Applies a knowledge of the characteristics of a variety of metals and alloys such as stainless steel, monel, brass, bronze, babbit, silver, aluminum, mild and hardened steels, etc.

RESPONSIBILITY

Works under the close supervision of the Chief Engineer or a higher grade engineer. Receives specific oral and written instructions outlining work schedules and plans for repair work to be

accomplished. Recommends changes to work plans to prevent delays, shutdowns, or damage, or to increase efficiency. Accomplishes and directs routine minor adjustments and repairs on own initiative and reports all problems and malfunctions to the Chief Engineer along with recommendations for the action to be taken. Directs the crew and personally makes major repairs as specified by the Chief Engineer and accomplishes such work under his close supervision. Requests higher level guidance when abnormal situations occur or when changes in plans are involved. Supervisor is on call at all times to provide guidance and assistance. Work is periodically inspected during process and reviewed in detail upon completion or at the end of the shift for operational efficiency. Is in technical charge of the engine room during his shift. Work is guided by written and oral instructions; operational and repair manuals; drawings, wiring diagrams, and sketches; and standard marine engine room practices. Ensures that job requirements and engine room work activities comply with established safety procedures and regulations.

WORKING CONDITIONS

Work is performed inside and outside subjecting employee to varying climatic conditions, abnormal noises, temperature, danger of burns, irritation from grease and oils, bruises, strains, dangers involved in attending moving machinery, possible drowning from falling overboard, electrical shock, falls on slippery decks or steep stairways, crankcase explosion. A lifejacket is worn at all times while on deck.

PHYSICAL EFFORT

Incumbent performs work from ladders, scaffolding, and platforms and where the parts, equipment, or systems are in hard-to-reach places. Work requires the incumbent to stand, stoop, bend, kneel, climb, and work in a tiring and uncomfortable position. Frequently lifts, carries, and sets up parts and equipment that weigh up to 40 pounds.

THIRD ASSISTANT ENGINEER, TOWBOAT
XH-4742-07
EVALUATION STATEMENT

1. REFERENCES:

   a. OPM, JGS, Utility Systems Repairer-Operator Series, WG-4742, July 1993

   b. U.S. Army Corps of Engineers Ladder Diagram, 1953

2. SERIES AND TITLE DETERMINATION:

Position serves as Third Assistant Engineer on a large (over 100 feet in length) diesel-powered twin screw towboat with a total horsepower of 2,000 hp or more operating in the inland waters of the United States. This is a training position leading to the future assignment to a full performance Second Assistant Engineer position. Incumbent is assigned regular watch responsibility. Duties require a knowledge of the vessel diesel, electric, mechanical, hydraulic and/or electronic equipment, systems, and auxiliary plant and machinery, and the related knowledges and skill requirements to diagnose problems and malfunctions, and supervise and participate in the repair, replacement, and modification of such machinery, engines, and systems. Employee must possess a U.S. Coast Guard Assistant Engineer's license commensurate with the type engine room machinery and equipment, horsepower, and characteristics of the vessel to which assigned. Position is allocated to the WG-4742 series. Position is titled Third Assistant Engineer, Towboat, in keeping with prevailing maritime titling practices. The absence of a requirement for an Assistant Engineers license precludes this position from being classified as an assistant engineer.

3. GRADE DETERMINATION:

This is a trainee job only and is designed to provide on-the-job training and development leading to a target level assignment as a Second Assistant Engineer, XH-4742-08. The grade will always be one grade lower than that of the target level job. Possession of an assistant engineer's license is necessary for assignment to a position covered by this Benchmark.

4. FINAL DETERMINATION: Third Assistant Engineer, Towboat, XH-4742-07